

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

EX PARTE Huang et al.

Application for Patent

Filed: April 07, 2004

Serial No. 10/709,006

FOR:

CIRCUIT AND METHOD OF DECOMPRESSING IMAGE

APPEAL BRIEF

JIANQ CHYUN Intellectual Property
Attorneys for Applicant

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I. REAL PARTY IN INTEREST

The real parties in interest are Hung-Jen Huang and Ying-Chih Yang, the inventors named in the subject application, and Sunplus Technology Co., Ltd., the assignee of record.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals and/or interferences.

III. STATUS OF THE CLAIMS

A total of 12 claims were presented during prosecution of this application. Appellant appeals rejected claims 1-12.

IV. STATUS OF AMENDMENTS

Applicant did not file any Amendments after Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to an image decompressing circuit and an image decompressing method.

The present invention involves an image decompressing circuit as set forth in independent claim 1. As shown in Fig. 2, the image decompressing circuit 200 includes a variable length decoding unit 210 and an image picture recovery unit 220 (paragraph [0023], lines 2-4). The variable length decoding unit 210 receives a compressed image picture and executing a debug analysis comprising syntax and semantics pre-check on the entire compressed image picture after the entire compressed image picture having been received (see paragraph [0024], lines 7-9; Fig. 2). When a result of the debug analysis indicates that the entire compressed image picture is suitable for a subsequent decoding operation, a

decoding process is then executed in pipeline on the compressed image picture (see see paragraph [0024], lines 10-14). The image picture recovery unit 220 is electrically coupled to the variable length decoding unit 210, for performing an inverse quantization, an inverse discrete cosine transformation and a motion compensation with a pipeline process after the compressed image picture has been decoded with the pipeline process (paragraph [0023], lines 4-6), so as to recover the compressed image picture (paragraph [0030], lines 8-9).

The present invention further involves an image decompressing method as set forth in independent claim 7. As shown in Figs. 2 and 3, the image decompressing method includes the steps of: receiving a compressed image picture (see paragraph [0024], lines 7-9; Fig. 2); executing a debug analysis comprising syntax and semantic pre-check on the entire compressed image picture after the entire compressed image picture having been received (see paragraph [0024], lines 10-11; Fig. 2), wherein when a result of the debug analysis indicates that the entire compressed image picture is suitable for a subsequent decoding operation, executing a decoding operation on the compressed image picture with a pipeline process (see paragraph [0024], lines 11-14; Fig. 2); and performing an inverse quantization, an inverse discrete cosine transformation and a motion compensation with a pipeline process after the compressed image picture has been decoded with the pipeline process (paragraph [0023], lines 4-6), so as to recover the compressed image picture (paragraph [0030], lines 8-9).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Claims 1, 2, 4, 5, 7, 8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Den Branden EP 1056297 in view of admitted prior art (APA).

Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Den Branden in view of Lavallee et al US 5,267,242.

VII. ARGUMENT

- A. Claims 1-12 were improperly rejected under 35 U.S.C. 112, first paragraph as failing to comply with the written description requirement.

Claim 1 should be allowed because Applicant's Specification makes it clear that a compressed image picture cannot be performed with a debug analysis until it is entirely received.

In the Office Action dated December 17, 2008, the Examiner stated:

Re claim 1, claim 1 states "... executing a debug analysis comprising syntax and semantics pre-check on the entire compressed image after the entire compressed image having been received." Applicant only mentions references the "entire compressed image" once in paragraph 27. However one of ordinary skill in the art would not interpret the invention as described in the specification to be limited in this manner. Paragraph 27 states **"in other words, the debug analysis is performed on the entire compressed image picture first, and when the result of the debug analysis indicates that there is no error data, it is determined that the compressed image picture is suitable for the subsequent decoding operation."** This paragraph only implies the debug analysis is performed on the entire compressed image before the compressed data is decoded, this can also be seen in figure 3 where the analyzing is completed prior to the pipelined decoding process. However, nowhere in the specification does it recite or imply that the entire performing debug analysis on the entire compressed image is performed after the entire compressed image picture having been received ...

Appellant submits that the "in other words, the debug analysis is performed on the entire compressed image picture first, and when the result of the debug analysis indicates that there is no error data, it is determined that the compressed image picture is suitable for the subsequent decoding operation" (Spec paragraph 27) should be understood in view of the sentence before, which recites: "In the present invention,

the variable length decoding unit 210 in the diagram performs syntax and semantics pre-check **after the compressed image picture has been received**” (Spec paragraph 27, emphasis added).

When a part of the compressed image picture has been received, but the rest of the compressed image picture has not, the entire compressed image picture won’t be ready for performing the debug analysis, just as one cannot view an entire picture when only a half of the picture has been downloaded from the internet to your computer. Only after the entire compressed image picture has been received can a debug analysis be performed on the entire compressed image picture as set forth in claim 1. After the compressed image picture has been received would be unambiguously understood by those skilled in the art as after the entirety of the compressed image picture has been received, so that the next step, i.e., the debug analysis, can be performed on the entire compressed image picture.

Claim 1 is fully supported in Applicant’s Specification, and should be allowed.

Claim 3 recites the limitation of “wherein when the variable length decoding unit performs the debug analysis on the entire compressed image picture and finds an error data, the entire compressed image picture is reloaded, so as to perform the debug analysis on the entire compressed image picture again”.

Paragraph 29 teaches: “when error data is found, the compressed image picture is reloaded, and the debug analysis is preformed on the compressed image picture again” (Spec paragraph 29).

Appellant submits that only when the entire compressed image picture is reloaded, can the debug analysis be performed on the compressed image picture again. Otherwise, when only a corrupted part is reloaded as instructed by the Examiner, it would be the reloaded corrupted part, instead of the compressed image picture, which is to be performed with the debug analysis again, which is illogical.

For the same reasons as Claim 3, that only when the entire compressed image picture is reloaded, can the debug analysis be performed on the compressed image picture again, Claims 4 and 5 are clearly taught in the Specification and should be allowed.

Claims 2 and 6 depend from Claim 1, and should be allowed for all the reasons given above Claim 1.

Claims 7-12 are method claims corresponding to the apparatus claims 1-6, and should be allowed for all the reasons given above for those claims.

Claims 1-12 are well supported by the disclosure, and the 35 U.S.C. 112, first paragraph rejections were improperly made thereto and should be withdrawn.

B. Claims 1, 2, 4, 5, 7, 8, 10, and 11 were improperly rejected under 35 U.S.C. 103(a) as being unpatentable over Van Den Branden EP 1056297 in view of admitted prior art (APA).

In the Final Office Action (FOA) dated December 17, 2008, the Examiner stated: “Applicant argues that Branden and the APA do not disclose ‘syntax and semantics pre-check on the entire compressed image picture’. The examiner disagrees the debug analysis is performed on every packet and is therefore performed for the entire image.” (FOA page 4, paragraph 6)

Appellant respectfully disagrees.

The Examiner interprets “examining marker bits” as the debug analysis required by Applicant’s claimed invention. However, as Applicant has explained at length in the Reply to Office Action (ROA) dated October 8, 2008, “**examining** marker bits” is not the debug analysis because the debug analysis is further restricted as comprising syntax and semantics pre-check on the entire compressed image picture (ROA page 6-10).

The Examiner contends that: “applicants should refer to paragraph 69 and 70” (FOA page 4-5, paragraph 7). In paragraph 70, Van Den Branden teaches: “at step 930, the audio or video decoder 730, 740 decodes the first portion of bitstream data in the frame of audio or video bitstream data and **checks the syntax of the audio and video bitstreams 727, 737** to detect the presence of lost or corrupted bitstream data” (Van Den Branden Column 24, lines 13-18). The syntax check is taught to be performed on the first portion of the bitstreams 727, 737, and clearly is not performed

on an entire compressed image picture. Further, it can be seen from Van Den Branden's teaching that the decoding and syntax checking are simultaneously performed. However, the claimed invention requires "wherein when a result of the debug analysis indicates that the entire compressed image picture is suitable for a subsequent decoding operation, executing a decoding process in pipeline on the compressed image picture" (Claim 1), and therefore, the claimed invention requires the decoding operation to be performed subsequent to the debug analysis upon the result of the debug analysis.

Van Den Branden doesn't disclose Applicant's invention, and therefore the fact that Applicant's Admitted Prior Art discloses process by pipeline is not relevant, and Claim 1 should be allowed.

For the same reason as that given for Claim 1, specifically that the debug process is performed on the entire compressed image picture before it is determined suitable for the subsequent decoding operation, Van Den Branden does not disclose Applicant's Claim 2.

Similarly for Claim 4, paragraphs 79 and 75 of Van Den Branden do not disclose "wherein when the variable length decoding unit performs the debug analysis on the entire compressed image picture and finds more than a predetermined number of the error data" because Applicant's debug analysis is performed on the entire compressed image picture.

Paragraphs 79 and 75 of Van Den Brandon also fail to disclose Claim 5 because "less than a predetermined number of error data" is determined according to the entire compressed image picture, and paragraph 75 of Van Den Brandon fails to say this.

Claims 7, 8, 10, and 11 are method claims performed by the apparatus of claims 1, 2, 4 and 5 and should be allowed for all the same reasons as given for those claims.

As such, appellant believes that claims 1, 2, 4, 5, 7, 8, 10, and 11 were improperly rejected under 35 U.S.C. 103(a) as being unpatentable over Van Den

Branden EP 1056297 in view of admitted prior art (APA), and the rejections made thereto should be withdrawn.

- C. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Den Branden in view of Lavallee et al US 5,267,242.

Claims 6 and 12 depend from Claims 1 and 7 respectively, and because Van Den Branden does not disclose performing a debug analysis on an entire compressed image picture, the fact that Lavallee discloses turning on and off error checking is not relevant and Claims 6 and 12 should be allowed.

D. Conclusion

In view of the above discussion, Appellant believes that the rejections under 35 U.S.C. 112, first paragraph, and 103(a) are in error, and respectfully requests the Board of Patent Appeals and Interferences to reverse the Examiner's rejections of the claims on appeal.

Date :

April 23, 2009

Respectfully submitted,

Belinda Lee
Belinda Lee

Registration No.: 46,863

Jianq Chyun Intellectual Property Office
7th Floor-1, No. 100
Roosevelt Road, Section 2
Taipei, 100
Taiwan
Tel: 011-886-2-2369-2800
Fax: 011-886-2-2369-7233
Email: belinda@jcipgroup.com.tw
Usa@jcipgroup.com.tw

VIII. CLAIMS APPENDIX

CLAIMS ON APPEAL

Claim 1. (previously presented) An image decompressing circuit, comprising:

a variable length decoding unit, for receiving a compressed image picture and executing a debug analysis comprising syntax and semantics pre-check on the entire compressed image picture after the entire compressed image picture having been received, wherein when a result of the debug analysis indicates that the entire compressed image picture is suitable for a subsequent decoding operation, executing a decoding process in pipeline on the compressed image picture; and

an image picture recovery unit, electrically coupled to the variable length decoding unit, for performing an inverse quantization, an inverse discrete cosine transformation and a motion compensation with a pipeline process after the compressed image picture has been decoded with the pipeline process, so as to recover the compressed image picture.

Claim 2. (previously presented) The image decompressing circuit of claim 1, wherein when the variable length decoding unit performs the debug analysis on the entire compressed image picture and finds no error data, the entire compressed image picture is determined suitable for the subsequent decoding operation.

Claim 3. (previously presented) The image decompressing circuit of claim 1, wherein when the variable length decoding unit performs the debug analysis on the entire compressed image picture and finds an error data, the entire compressed image picture is reloaded, so as to perform the debug analysis on the entire compressed image picture again.

Claim 4. (previously presented) The image decompressing circuit of claim 1, wherein when the variable length decoding unit performs the debug analysis on the entire compressed image picture and finds more than a predetermined number of the error data and there is no sufficient time to reload the entire compressed image picture, the entire compressed image picture is aborted.

Claim 5. (previously presented) The image decompressing circuit of claim 1, wherein when the variable length decoding unit performs the debug analysis on the entire compressed image picture and finds less than a predetermined number of the error data and there is no sufficient time to reload the entire compressed image picture, the entire compressed image picture is determined suitable for the subsequent decoding operation.

Claim 6. (previously presented) The image decompressing circuit of claim 1, wherein the variable length decoding unit can selectively turn on or turn off the debug analysis function for the entire compressed image picture.

Claim 7. (previously presented) A method of decompressing images, comprising:
receiving a compressed image picture;
executing a debug analysis comprising syntax and semantics pre-check on the entire compressed image picture after the entire compressed image picture having been received, wherein when a result of the debug analysis indicates that the entire compressed image picture is suitable for a subsequent decoding operation, executing a decoding operation on the compressed image picture with a pipeline process; and

performing an inverse quantization, an inverse discrete cosine transformation and a motion compensation with a pipeline process after the compressed image picture has been decoded with the pipeline process, so as to recover the compressed image picture.

Claim 8. (previously presented) The method of decompressing images of claim 7, wherein when executing the debug analysis on the entire compressed image picture and not finding any error data, the compressed image data is determined suitable for the subsequent decoding operation.

Claim 9. (previously presented) The method of decompressing images of claim 7, wherein when executing the debug analysis on the entire compressed image picture and finding an error data, the entire compressed image picture is reloaded, and the debug analysis is executed on the entire compressed image picture again.

Claim 10. (previously presented) The method of decompressing images of claim 7, wherein when executing the debug analysis on the entire compressed image picture and finding more than a predetermined number of the error data and there is no sufficient time to reload the entire compressed image picture, the entire compressed image picture is aborted.

Claim 11. (previously presented) The method of decompressing images of claim 7, wherein when executing the debug analysis on the entire compressed image picture and finding less than a predetermined number of the error data and there is no sufficient time to reload the entire compressed image picture, the entire compressed image picture is determined suitable for the subsequent decoding operation.

Claim 12. (previously presented) The method of decompressing images of claim 7, wherein the debug analysis function for the entire compressed image picture can be selectively turned on or turned off.

IX. EVIDENCE APPENDIX

There is no evidence submitted pursuant to §§ 1.130, 1.131, or 1.132 of this title or of any other evidence entered by the examiner and relied upon by appellant in the appeal, along with a statement setting forth where in the record that evidence was entered in the record by the examiner.

X. RELATED PROCEEDINGS APPENDIX

There are no decisions rendered by a court or the Board in the proceeding identified in the Related Appeals and Interferences section of the brief.